

**In the Claims:**

Please amend the claims as indicated below:

1. (Currently Amended) A magnetic random access memory comprising:
  - a plurality of first signal lines provided to extend in a first direction;
  - a plurality of second signal lines provided to extend in a second direction substantially perpendicular to said first direction;
  - a plurality of memory cells respectively provided at intersections of said plurality of first signal lines and said plurality of second signal lines; and
  - a plurality of magnetic structures respectively provided for said plurality of memory cells,wherein each of said plurality of memory cells comprises a magneto-resistance element containing a spontaneous magnetization layer which has a first threshold function, and a direction of a spontaneous magnetization of said spontaneous magnetization layer is reversible when an element applied magnetic field equal to or larger than a value of the first threshold function is applied,
  - each of said plurality of magnetic structures has a second threshold function, and generates a magnetic structure magnetic field in response to a structure applied magnetic field, and generates a ~~third~~ first structure magnetic field as said magnetic structure magnetic field when said structure applied magnetic field is equal to or larger than a value of a second threshold function, and a ~~fourth~~ second structure magnetic field, which is weaker than said ~~third~~ first structure magnetic field, as said magnetic structure magnetic field, when said structure applied magnetic field is less than the second threshold function value,
  - a first write current is supplied to one of said plurality of first signal lines as a first selected signal line such that a first magnetic field is generated, a second write current is

supplied to one of said plurality of second signal lines as a second selected signal line such that a second magnetic field is generated, and a first synthetic magnetic field of said first magnetic field and said second magnetic field is applied to said plurality of magnetic structures as said structure applied magnetic field, and

a second synthetic magnetic field of said first synthetic magnetic field and said magnetic structure magnetic field is generated as said element applied magnetic field such that said element applied magnetic field equal to or larger than the first threshold function value is applied to a selected memory cell as one of said plurality of memory cells which is provided at the intersection of said first selected signal line and said second selected signal line, and such that said element applied magnetic field less than the first threshold function value is applied to each of non-selected memory cells as ones said plurality of memory cells other than said selected memory cell.

2. (Original) The magnetic random access memory according to claim 1, wherein each of said plurality of magnetic structures comprises:

a first magnetic layer formed of ferromagnetic material;  
a second magnetic layer formed of ferromagnetic material; and  
a non-magnetic layer interposed between said first magnetic layer and said second magnetic layer.

3. (Original) The magnetic random access memory according to claim 1, wherein said non-magnetic layer has a film thickness such that said first magnetic layer is anti-ferromagnetically coupled to said second magnetic layer.

4. (Currently Amended) The magnetic random access memory according to claim 2 ~~or~~ 3, wherein the second threshold function is determined based on the film thickness of said non-magnetic layer.

5. (Currently Amended) The magnetic random access memory according to ~~any of claims 2 to 4~~ claim 2, wherein when said structure applied magnetic field is not applied, said magnetic structure magnetic field generated by said magnetic structure is substantially 0.

6. (Currently Amended) The magnetic random access memory according to ~~any of claims 1 to 5~~ claim 1, wherein when said first write current is supplied to said first selected signal line and said second write current is supplied to f said second selected signal line, said first synthetic magnetic field larger than the second threshold function value is applied as said structure applied magnetic field to said magnetic structure corresponding to said selected memory cell, and said magnetic structure corresponding to said selected memory cell generates said ~~third~~ first structure magnetic field as said magnetic structure magnetic field, and such that said second synthetic magnetic field of said first synthetic magnetic field and said ~~third~~ first structure magnetic field is applied to said magneto-resistance element of said selected memory cell as said element applied magnetic field equal to or larger than the first threshold function value, and said first synthetic magnetic field having the intensity less than the second threshold function value is applied as said structure applied magnetic field to said magnetic structure corresponding to each of said non-selected memory cells, and said magnetic structure corresponding to said non-selected memory cell generates said ~~fourth~~ second structure magnetic field as the magnetic structure magnetic field, and such that said second synthetic magnetic field of said first synthetic magnetic field and said ~~fourth~~ second structure magnetic field is applied to

said magneto-resistance element of said selected memory cell as said element applied magnetic field less than the first threshold function value.

7. (Currently Amended) The magnetic random access memory according to ~~any of claims 1 to 5~~ claim 1, wherein when said first write current is supplied to said first selected signal line and said second write current is supplied to f said second selected signal line, said first synthetic magnetic field less than the second threshold function value is applied as said structure applied magnetic field to said magnetic structure corresponding to said selected memory cell, and said magnetic structure corresponding to said selected memory cell generates said ~~fourth~~ second structure magnetic field as said magnetic structure magnetic field, and such that said synthetic magnetic field of said first synthetic magnetic field and said ~~fourth~~ second structure magnetic field is applied to said magneto-resistance element of said selected memory cell as said element applied magnetic field equal to or larger than the first threshold function value, and

said first synthetic magnetic field having the intensity equal to or larger than the second threshold function value is applied as said structure applied magnetic field to said magnetic structure corresponding to each of said non-selected memory cells, and said magnetic structure corresponding to said non-selected memory cell generates said ~~third~~ first structure magnetic field as said magnetic structure magnetic field, and such that said synthetic magnetic field of said first synthetic magnetic field and said ~~third~~ first structure magnetic field is applied to said magneto-resistance element of said selected memory cell as said element applied magnetic field less than the first threshold function value.

8. (Original) The magnetic random access memory according to claim 6, wherein one of said plurality of first signal lines and one of said plurality of second signal lines are provided

between a corresponding one of said plurality of memory cells and said magnetic structure corresponding to the corresponding memory cell, and

said corresponding magnetic structure is provided directly or indirectly on said first signal line.

9. (Currently Amended) The magnetic random access memory according to claim 7, wherein each of said plurality of memory cells and said magnetic structure corresponding to said memory cell and provided above or below said memory cell are provided between one of said plurality of first signal lines corresponding to said memory cell and one of said plurality of second signal lines corresponding to said memory cell.

10. (Currently Amended) The magnetic random access memory according to claim 6 ~~or 8~~, wherein said magnetic structure has a circular plane structure.

11. (Currently Amended) The magnetic random access memory according to ~~any of claims 6 to 9~~ claim 6, wherein said magnetic structure has an elliptical plane structure.

12. (Original) The magnetic random access memory according to claim 11, wherein an elliptical long axis of said magnetic structure is directed into a direction other than the first direction and the second direction.

13. (Original) The magnetic random access memory according to claim 12, wherein the elliptical long axis of said magnetic structure is directed to the direction of 45 degrees from each of the first direction and the second direction.

14. (Original) A magnetic random access memory comprising:

a plurality of first signal lines provided to extend in a first direction;

a plurality of second signal lines provided to extend in a second direction substantially perpendicular to the first direction;

a plurality of memory cells, each of which contains a magneto-resistance element having a spontaneous magnetization whose direction is reversible based on data to be stored, and which are respectively provided at intersections of said plurality of first signal lines and said plurality of second signal lines; and

a plurality of magnetic structures which are provided for said plurality of memory cells, and each of which applies a magnetic field to said magneto-resistance element contained in a corresponding one of said plurality of memory cells based on induced magnetization,

wherein one of said plurality of memory cells provided for the intersection of a first selected signal line selected from among said plurality of first signal lines and a second selected signal line from among said plurality of second signal lines is a selected memory cell,

one of said plurality of magnetic structures corresponding to said selected memory cell is a selected magnetic structure,

one of said plurality of memory cells which is other than said selected memory cell and which intersects said first selected signal line is a first non-selected memory cells,

one of said plurality of magnetic structures corresponding to said first non-selected memory cell is a first non-selected magnetic structure,

a synthetic magnetic field  $H_{xy}$  applied to said selected magnetic structure by a first write current flowing through said first selected signal line in a write operation and a second write current flowing through said second selected signal line in the write operation, said magnetization  $M_{xy}$  induced in said selected magnetic structure by said synthetic magnetic field  $H_{xy}$ , a magnetic field  $H_y$  applied to each of said first non-selected magnetic structures by said

first write current in the write operation, and a magnetization  $M_y$  induced in said first non-selected magnetic structure by said magnetic field  $H_y$  satisfy the following relation:

$$M_{xy} / H_{xy} \neq M_y / H_y.$$

15. (Original) The magnetic random access memory according to claim 14, wherein one of said plurality of memory cells which is other than said selected memory cell and which intersects said second selected signal line is a second non-selected memory cell, and one of said plurality of magnetic structures corresponding to said second non-selected memory cell is a second non-selected magnetic structure,

said synthetic magnetic field  $H_{xy}$ , said magnetization  $M_{xy}$ , a magnetic field  $H_x$  applied to said second non-selected magnetic structure by said second write current in the write operation, and a magnetization  $M_x$  induced in said second non-selected magnetic structure by said magnetic field  $H_x$  satisfy the following relation:

$$M_{xy} / H_{xy} \neq M_x / H_x.$$

16. (Original) The magnetic random access memory according to claim 14, wherein said plurality of magnetic structures are arranged in positions where said magnetization  $M_{xy}$  and said magnetization  $M_y$  are induced such that a magnetic field applied to said magneto-resistance element contained in said selected memory cell by said first write current and said second write current and a magnetic field applied to said magneto-resistance element contained in said first non-selected memory cell by said first write current are enhanced, and

said magnetic field  $H_y$ , said synthetic magnetic field  $H_{xy}$ , said magnetization  $M_y$  and said magnetization  $M_{xy}$  satisfy

$$M_{xy} / H_{xy} > M_y / H_y.$$

17. (Original) The magnetic random access memory according to claim 14, wherein said plurality of first signal lines and said plurality of second signal lines are located between said plurality of magnetic structures and said plurality of memory cells, and

said magnetic field  $H_y$ , said synthetic magnetic field  $H_{xy}$ , said magnetization  $M_y$  and said magnetization  $M_{xy}$  satisfy

$$M_{xy} / H_{xy} > M_y / H_y.$$

18. (Original) The magnetic random access memory according to claim 17, wherein one of said plurality of memory cells which is other than said selected memory cell and which intersects said second selected signal line is a second non-selected memory cell,

one of said plurality of magnetic structures corresponding to said second non-selected memory cell is a second non-selected magnetic structure, and

said synthetic magnetic field  $H_{xy}$ , said magnetization  $M_{xy}$ , said magnetic field  $H_x$  applied to said second non-selected magnetic structure by said second write current in the write operation, and said magnetization  $M_x$  induced in said second non-selected magnetic structure by said magnetic field  $H_x$  satisfy

$$M_{xy} / H_{xy} > M_x / H_x .$$

19. (Original) The magnetic random access memory according to claim 14, wherein said plurality of magnetic structures are arranged in positions where said magnetization  $M_{xy}$  and said magnetization  $M_y$  are induced such that a magnetic field applied to said magneto-resistance element contained in said selected memory cell by said first write current and said second write current and a magnetic field applied to said magneto-resistance element contained in said first non-selected memory cell by said first write current are weakened, and



said magnetic field  $H_y$ , said synthetic magnetic field  $H_{xy}$ , said magnetization  $M_y$ , and said magnetization  $M_{xy}$  satisfy

$$M_{xy} / H_{xy} < M_y / H_y.$$

20. (Original) The magnetic random access memory according to claim 14, wherein said plurality of magnetic structures and said plurality of memory cells are located between said plurality of first signal lines and said plurality of second signal lines, and

said magnetic field  $H_y$ , said synthetic magnetic field  $H_{xy}$ , said magnetization  $M_y$  and said magnetization  $M_{xy}$  satisfy

$$M_{xy} / H_{xy} < M_y / H_y.$$

21. (Original) The magnetic random access memory according to claim 20, wherein one of said plurality of memory cells which is other than said selected memory cell and which intersects said second selected signal line is a second non-selected memory cell,

one of said plurality of magnetic structures corresponding to said second non-selected memory cell is a second non-selected magnetic structure, and

said synthetic magnetic field  $H_{xy}$ , said magnetization  $M_{xy}$ , said magnetic field  $H_x$  applied to said second non-selected magnetic structure by said second write current in the write operation, and said magnetization  $M_x$  induced in said second non-selected magnetic structure satisfy

$$M_{xy} / H_{xy} < M_x / H_x.$$

22. (Currently Amended) The magnetic random access memory according to ~~any of claims 14 to 21~~ claim 14, wherein each of said plurality of magnetic structures comprises a ferri-magnetic laminate structure comprises:

a first magnetic layer formed of ferromagnetic material;  
a second magnetic layer formed of ferromagnetic material; and  
a non-magnetic layer interposed between said first magnetic layer and  
said second magnetic layer and having a film thickness such that said first magnetic  
layer is anti-ferromagnetically coupled to said second magnetic layer.

23. (Currently Amended) The magnetic random access memory according to claim 16 ~~or 17~~,  
wherein each of said plurality of magnetic structures comprises a ferri-magnetic laminate  
structure comprises:

a first magnetic layer formed of ferromagnetic material;  
a second magnetic layer formed of ferromagnetic material; and  
a non-magnetic layer interposed between said first magnetic layer and said second  
magnetic layer, and having a film thickness such that said first magnetic layer is anti-  
ferromagnetically coupled to said second magnetic layer,

said synthetic magnetic field  $H_{xy}$  is larger than a threshold magnetic field  $H_{txy}$  of said  
ferri-magnetic laminate structure in a direction of said synthetic magnetic field  $H_{xy}$ , and said  
magnetic field  $H_y$  is smaller than a threshold magnetic field  $H_{ty}$  of said ferri-magnetic laminate  
structure in a direction of a magnetic field  $H_y$ .

24. (Currently Amended) The magnetic random access memory according to claim 18,  
wherein each of said plurality of magnetic structures comprises a ferri-magnetic laminate  
structure comprises:

a first magnetic layer formed of ferromagnetic material;  
a second magnetic layer formed of ferromagnetic material; and

a non-magnetic layer interposed between said first magnetic layer and said second magnetic layer and having a film thickness such that said first magnetic layer is anti-ferromagnetically coupled to said second magnetic layer,

said synthetic magnetic field  $H_{xy}$  is larger than a threshold magnetic field  $H_{txy}$  of said ferri-magnetic laminate structure in a direction of said synthetic magnetic field  $H_{xy}$ ,

said magnetic field  $H_x$  is smaller than a threshold magnetic field  $H_{tx}$  of said ferri-magnetic laminate structure in a direction of said magnetic field  $H_x$ , and

said  $[[a]]$  magnetic field  $H_y$  is smaller than a threshold magnetic field  $H_{ty}$  of said ferri-magnetic laminate structure in a direction of said magnetic field  $H_y$ .

25. (Original) The magnetic random access memory according to claim 24, wherein anisotropy is given to said magneto-resistance element such that the direction of said spontaneous magnetization of said magneto-resistance element is substantially coincident with the first direction, and to said ferri-magnetic laminate structure such that directions of spontaneous magnetizations of said first magnetic layer and said second magnetic layer are directed into a third direction which is not perpendicular to the first direction.

26. (Original) The magnetic random access memory according to claim 24, wherein an angle between the first direction and the third direction is substantially 45 degrees.

27. (Original) The magnetic random access memory according to claim 25, wherein the direction of said synthetic magnetic field  $H_{xy}$  is substantially perpendicular to the third direction.

28. (Currently Amended) The magnetic random access memory according to claim 19 or 20, wherein each of said plurality of magnetic structures comprises a ferri-magnetic laminate structure comprises:

- a first magnetic layer formed of ferromagnetic material;
  - a second magnetic layer formed of ferromagnetic material; and
  - a non-magnetic layer interposed between said first magnetic layer and said second magnetic layer and having a film thickness such that said first magnetic layer is anti-ferromagnetically coupled to said second magnetic layer,
- said synthetic magnetic field  $H_{xy}$  is smaller than a threshold magnetic field  $H_{txy}$  of said ferri-magnetic laminate structure in a direction of said synthetic magnetic field  $H_{xy}$ , and
- said magnetic field  $H_y$  is larger than a threshold magnetic field  $H_{ty}$  of said ferri-magnetic laminate structure in a direction of the magnetic field  $H_y$ .

29. (Original) The magnetic random access memory according to claim 28, wherein anisotropy is given to said magneto-resistance element such that the direction of the spontaneous magnetization of said magneto-resistance element is substantially coincident with the first direction, and to said ferri-magnetic laminate structure such that directions of spontaneous magnetizations of said first magnetic layer and said second magnetic layer are substantially coincident with the first direction.

30. (Original) The magnetic random access memory according to claim 21, wherein each of said plurality of magnetic structures comprises a ferri-magnetic laminate structure comprises:

- a first magnetic layer formed of ferromagnetic material;
- a second magnetic layer formed of ferromagnetic material; and

a non-magnetic layer interposed between said first magnetic layer and said second magnetic layer and having a film thickness such that said first magnetic layer is anti-ferromagnetically coupled to said second magnetic layer,

said synthetic magnetic field  $H_{xy}$  is smaller than a threshold magnetic field  $H_{txy}$  of said ferri-magnetic laminate structure in a direction of said synthetic magnetic field  $H_{xy}$ ,

said magnetic field  $H_x$  is larger than a threshold magnetic field  $H_{tx}$  of said ferri-magnetic laminate structure in a direction of said magnetic field  $H_x$  and

said magnetic field  $H_y$  is larger than a threshold magnetic field  $H_{ty}$  of said ferri-magnetic laminate structure in a direction of said magnetic field  $H_y$ .

31. (Original) The magnetic random access memory according to claim 30, wherein anisotropy is given to said magneto-resistance element such that a direction of the spontaneous magnetization of said magneto-resistance element is substantially coincident with the first direction, and to said ferri-magnetic laminate structure such that directions of spontaneous magnetizations of said first magnetic layer and said second magnetic layer are directed into a third direction which is not perpendicular to the first direction.

32. (Original) The magnetic random access memory according to claim 21, wherein the direction of said synthetic magnetic field  $H_{xy}$  is substantially identical to the third direction.